

Amendments to the Claims

Please amend the claims as follows:

- 1 [C1] (currently amended) A process for preparing syngas, comprising:
 - 2 partially oxidizing a first hydrocarbon portion with oxygen in a partial
 - 3 oxidation reactor to produce a first reactor effluent;
 - 4 cooling the first reactor effluent to a temperature from 650° to 1000°C, said
 - 5 cooling including direct heat exchange with water introduced into the
 - 6 first reactor effluent as a quench fluid;
 - 7 supplying the cooled first reactor effluent to a reforming exchanger;
 - 8 passing a second hydrocarbon portion with steam through a catalyst zone in
 - 9 the reforming exchanger to form a second reactor effluent, wherein the
 - 10 first and second hydrocarbon portions are supplied in a weight ratio of
 - 11 from 40:60 to 60:40;
 - 12 discharging the second reactor effluent from the catalyst zone to form an
 - 13 admixture with the first reactor effluent;
 - 14 passing the admixture across the catalyst zone in indirect heat exchange
 - 15 therewith to cool the admixture and heat the catalyst zone; and
 - 16 collecting the cooled admixture from the reforming exchanger.
- 1 [C2] (canceled)

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- 1 [C3] (currently amended) The process of claim 1 [[2]], wherein the first reactor
2 effluent cooling further comprises indirect heat exchange downstream from
3 the direct heat exchange and upstream from the reforming exchanger.
- 1 [C4] (currently amended) The process of claim 3, wherein the first reactor
2 effluent cooling by indirect heat exchange comprises heating the second
3 hydrocarbon portion upstream from the catalyst zone in a cross exchange.
- 1 [C5] (canceled)
- 1 [C6] (canceled)
- 1 [C7] (original) The process of claim 1, wherein the catalyst zone comprises
2 catalyst tubes.
- 1 [C8] (currently amended) The process of claim 4 [[5]], wherein the second
2 hydrocarbon portion is supplied to a tube side of the reforming exchanger
3 and passed through the catalyst tubes.
- 1 [C9] (currently amended) The process of claim 8 [[5]], wherein the cooled first
2 reactor effluent is supplied to a shell side inlet of the reforming exchanger.
- 1 [C10] (currently amended) The process of claim 9 [[7]], wherein the shell side
2 inlet is adjacent an outlet end of the catalyst tubes.
- 1 [C11] (canceled)
- 1 [C12] (canceled)
- 1 [C13] (canceled)

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1 [C14] (previously presented) An apparatus for producing syngas, comprising:
2 partial oxidation reactor means for partially oxidizing a first hydrocarbon
3 portion with oxygen to produce a first reactor effluent;
4 means for cooling the first reactor effluent to a temperature from 650° to
5 1000°C, said cooling means including means for introducing water into
6 the first reactor effluent as a quench fluid for direct heat exchange;
7 means for supplying the cooled first reactor effluent to a reforming
8 exchanger;
9 means for passing a second hydrocarbon portion with steam through a
10 catalyst zone in the reforming exchanger to form a second reactor
11 effluent, wherein the first and second hydrocarbon portions are supplied
12 in a weight ratio of from 40:60 to 60:40;
13 means for discharging the second reactor effluent from the catalyst zone to
14 form an admixture with the first reactor effluent;
15 means for passing the admixture across the catalyst zone in indirect heat
16 exchange therewith to cool the admixture and heat the catalyst zone;
17 means for collecting the cooled admixture from the reforming exchanger;
18 and
19 means for shift converting the collected admixture to increase hydrogen
20 content.

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[C15] (canceled)

[C16] (canceled)

[C17] (canceled)

[C18] (canceled)

[C19] (canceled)

[C20] (canceled)

[C21] (canceled)

1 [C22] (previously presented) The process of claim 1 wherein the partial oxidation
2 reactor is a non-catalytic reactor.

1 [C23] (previously presented) The process of claim 1 wherein the partial oxidation
2 reactor is a free flow, unpacked, non-catalytic reactor.

1 [C24] (previously presented) The process of claim 1 wherein a temperature of the
2 first reactor effluent is greater than 1100°C.

1 [C25] (currently amended) A process for preparing a hydrogen-rich syngas,
2 comprising:

3 partially oxidizing a first hydrocarbon portion with oxygen in a non-catalytic
4 partial oxidation reactor to produce a first reactor effluent having a
5 temperature greater than 1100°C;

6 cooling the first reactor effluent to a temperature from 650° to 1000°C;

7 said cooling including:

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8 direct heat exchange with water introduced into the first reactor
9 effluent as a quench fluid; and
10 indirect heat exchange in a cross exchange downstream from the
11 direct heat exchange and upstream from the reforming
12 exchanger comprising heating the second hydrocarbon portion
13 upstream from the catalyst zone;
14 supplying the cooled first reactor effluent to a reforming exchanger;
15 passing a second hydrocarbon portion with steam through a catalyst zone in
16 the reforming exchanger to form a second reactor effluent, wherein the
17 first and second hydrocarbon portions are supplied in a weight ratio of
18 from 40:60 to 60:40;
19 discharging the second reactor effluent from the catalyst zone to form an
20 admixture with the first reactor effluent;
21 passing the admixture across the catalyst zone in indirect heat exchange
22 therewith to cool the admixture and heat the catalyst zone; and
23 collecting the cooled admixture from the reforming exchanger.

- 1 [C26] (canceled)
- 1 [C27] (canceled)
- 1 [C28] (canceled)
- 1 [C29] (canceled)

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- 1 [C30] (canceled)
- 1 [C31] (previously presented) The process of claim 25, wherein the catalyst zone
2 comprises catalyst tubes.
- 1 [C32] (currently amended) The process of claim 31 [[29]], wherein the second
2 hydrocarbon portion is supplied to a tube side of the reforming exchanger
3 and passed through the catalyst tubes.
- 1 [C33] (currently amended) The process of claim 32 [[29]], wherein the cooled first
2 reactor effluent is supplied to a shell side inlet of the reforming exchanger.
- 1 [C34] (currently amended) The process of claim 33 [[31]], wherein the shell side
2 inlet is adjacent an outlet end of the catalyst tubes.
- 1 [C35] (canceled)
- 1 [C36] (canceled)
- 1 [C37] (canceled)
- 1 [C38] (new) The process of claim 1, wherein the partial oxidation reactor,
2 catalytic reactor and the cooling of the first reactor effluent are operated to
3 favor hydrogen production over carbon monoxide production.
- 1 [C39] (new) The process of claim 1, further comprising shift converting the
2 collected admixture to increase hydrogen content.

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- 1 [C40] (new) The process of claim 1, wherein the cooled first reactor effluent supplied to the reforming exchanger has a water content in excess of stoichiometric for shift conversion of CO.
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